

## AMENDMENTS TO THE CLAIMS

1-26. (Canceled)

27. (Original) A method for linearly dispersing charged particles by their mass-energy-to-charge ratios, comprising introducing charged particles into an inhomogeneous magnetic field produced by a magnetic separator that provides a linear dispersion of the charged particles proportional to their mass-energy-to-charge ratio.

28. (Original) The method of Claim 27 wherein the linear dispersion of charged particles proportional to their mass-energy-to-charge ratio is achieved by an inhomogeneous magnetic field in one plane and a homogeneous magnetic field in another plane.

29. (Original) The method of Claim 27 wherein the linear dispersion of the charged particles proportional to their mass-energy-to-charge ratio is along a predetermined plane.

30. (Original) The method of Claim 27 further comprising providing a transverse gradient magnetic field for focusing uncollimated charged particle beams.

31. (Original) The method of Claim 27 wherein the magnetic field varies according to the function  $B(x) = B_0 x^{-3/4}$ , where  $B_0$  is a magnetic field constant chosen to match a nominal magnetic field and  $X$  is a distance measured along the separator's centerline axis.

32. (Original) The method of Claim 27 wherein the magnetic separator comprises a single magnet.

33. (Original) The method of Claim 32 wherein the magnet comprises two poles separated by a gap through which pass charged particle beams.

34. (Original) The method of Claim 33 wherein the gap between the poles varies according to the function  $g(x) = \tan(x^{-1/4})$ , where  $x$  is a distance measured along the pole surface.

35. (Original) A method for achieving a linear dispersion magnetic separator comprising integrating the charged particles' equations of motion in a target magnetic field and adjusting the target magnetic field to match desired charged particle trajectories.

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